DOCUMENT RESUME

ED 119 872 PS 008 467

AUTHOR Wright, Cecil
TITLE The Black Child and Science.
INSTITUTION Kentucky Univ., Lexington. Center for Professional Development.
PUB DATE 75
NOTE 20p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS Creative Activities; *Creative Expression; Dramatic Play; Educational Objectives; *Elementary Education; Poetry; *Preschool Education; *Skill Development; Story Telling; *Teaching Techniques

ABSTRACT

The value of providing creative verbal activities such as storytelling, dramatizations, rhythmics and rhyming for preschool and elementary school children is discussed in this paper. Some specific educational goals which can be facilitated by such activities are suggested. A five-stage sequence of storytelling skills and activities is presented which includes (1) finger stories and simple action songs (2) chalktalks (3) pupil dramatizations (4) retelling and revising stories and nursery rhymes and (5) original stories by individual pupils and cooperating groups. Each level of this sequence is fully discussed and is accompanied by sample activities and teaching tips. (JMB)

THE BLACK CHILD AND SCIENCE

by

Dr. Cecil Wright

Guest Editor
Dr. Necia Coker

Center for Professional Development
College of Education
University of Kentucky
Lexington, Kentucky

FOREWORD

The Center for Professional Development, College of Education, University of Kentucky, in keeping with its mission to serve as a beacon in the effort to provide information for advocates of Early Childhood Education as well as to assure the growth and preservation of our children, presents the second monograph in The Early Childhood Education Series.

The series debuted in October with the publication of "Encouraging Creative Verbal Processes With Preschool and Elementary School Children" by Elizabeth R. Nelli. An overwhelming response encouraged a second printing of Mrs. Nelli's article which may be obtained by writing the guest editor, Dr. Necia Coker, Room 307, Dickey Hall, College of Education, University of Kentucky, 40506, or by contacting the CPD.

In the second number of the series, Dr. Cecil Wright, Assistant Professor of Early Childhood Education in the UK College of Education, provides some provocative answers to the questions posed by educators concerned with strategies and problems arising from the needs of our diverse universe of young children. Professor Wright has been a teacher, served as Assistant Director of the Preschool Project, and as Curriculum Specialist and Staff Development Coordinator, in the Fort Worth Independent schools. As Curriculum Director for the Southwest Educational Development Laboratory at Austin, Texas, she conducted workshops for the installation of curriculum in school districts of the Southwest states, including California and Arkansas. Dr. Wright's publications include "The

Central Cities Project," Elementary Principals and Supervisors Association Journal (April, 1970). Her dissertation, entitled "The Development and Validation of Black Cultural Awareness Goals and Objectives for Preservice and Inservice Teacher Training," was completed at the University of Texas.

The editor is appreciative of the efforts of Dr. Fred Edmonds, Director of the Center for Professional Development; Lynn Moore, Assistant Editor; Dr. Bruce Petty, artist; Margaret Verble, reviewer; Dr. Dave Denton, writer's workshop; and Sandra Jones, secretary, for their continuing assistance in developing this series of publications.

Necia Coker
Guest Editor

Preface

Whenever writings appear about Black children a question often asked is, "Are they really different and, if so, in what way?" This question leads into more global questions as: Are children from various cultural backgrounds different or alike? Are children from various families different or alike? Are children of cities different from children of rural areas? Are children of the South different from children of the North, East or West?

One could answer yes or no to most, or even all, of these questions. All beings are the product of their environment. As we are exposed to greater, fewer, or broader experiences, we are different; at the same time, because of the universality of human experience, we are alike. In acceptance of these premises this article is written with emphasis toward the Black child.

Are these materials and methods applicable to other children? The answer is a resounding YES! They are applicable to children of various cultures, various families, different cities or rural areas, as well as geographical areas.

The article addresses the teaching of science through purposes, goals, materials and equipment, and teacher techniques. Its objective is to assist teachers of all young children clamoring for attention and the opportunity to learn.

Why science for the young black child?

The Black child learns through science that he can be, and often is, responsible for his destiny. He learns that for each action there is a reaction. The plant which does not get proper amounts of water and light suffers or the animal which is fed a poor diet becomes sickly. On the other hand, there are many areas where his first action will create the favorable reaction he desires. The well fed pet thrives and multiplies.

Science provides for the Black child the pertinent knowledge that there is no one way to discover the unknown. Some ways are more or less expedient, but who is to say which is better or worse and for whom? If it takes one group's seeds longer to sprout, the teacher's opportunity to increase development of the subject is automatic. The class can check records for amount of water given, kind of soil used, container in which planted, placement for sunlight, and depth of planting. You can think of many other suggestions to increase the knowledge level.

Since Black children often live in communities where large numbers of children are always available for play outside, little time is spent inside focusing on quiet educational activities. During this play, however, the child develops many cooperative skills. Science affords many avenues to reinforce these valuable cooperative skills. The plants, pets, or the cooking experiments progress better if each person does his share. He can assist a friend whose task may require more help. The opportunity to talk to a friend is enhanced. The

children are afforded a common ground on which to discuss a point. The child then has the opportunity to discuss the difference which was created by his watering plants with juice instead of plain water. His current skills are immediately useful and acceptable through the use of groups. Group and activity methods are more in accord with his daily life structure, orientation, and limited five-year-old attention span!

Through science, the Black child can develop concepts, both physical and social, about the world, which can allow him to accumulate knowledge from experience and develop new powers of understanding. Science provides a unique experience for each child. There are no boundary lines of interest except as it suits the individual child. The child who cares less about animals may be intrigued by plants and/or rocks.

The Black child who is activity oriented has an acceptable (to the teacher) reason for moving and talking through the avenue of science. Science provides a multiplicity of activities from which the teacher can interest her class for a period of a few minutes, days, or even weeks. The levels of skill needed for any project vary to such a degree that each child can participate in some portion of each experiment. There can be a place along the development of scientific experimentation for the most excitable and energetic child to the quietest and most stoic. The Black child, possibly lacking in the quiet attitude of sitting, has a motivation, through science, to develop self-control. Lewis discusses scientific attitudes that can beneficially influence the attitudes of Black children:

1) the questioning of vague explanations;
2) the rejection of gossip and superstition as valid explanation:
3) the awareness that all knowledge is tentative;
4) the awareness that man's conception of truth changes;
5) the awareness that much knowledge remains to be discovered (Lewis, 1970, p. 18).

Science teaching is most concerned with developing: 1) an inquiring mind; 2) a basic understanding and use of the biological and physical environment; and 3) attitudes and process skills that are essential for literate democratic citizens who will be able to actively participate in the decisions of their society.

Science for the Black child provides an open avenue into parental involvement also. The Black child who comes from a low-income home is oriented more towards discipline, authority and conformity to rules, than he is toward a pleasant environment for learning. Often Black parents explain the child-teacher relationship to their children from the point of view of authority rather than interaction. Rules and obedience are emphasized rather than inquiry and exploration. Further, Black children are often denied the participation of general conversation with adults. In the company of adults, they are more prone to become listeners and observers than participants in conversation. Science should provide the Black child with an acceptable avenue for questioning adults as well as an avenue into adult-child discussions.

The child may discuss openly and excitedly his individual or group project. Many projects are simple enough that they can be conducted at home with the help of parents and siblings. For example, the discussion of the differences between a raw turnip and a cooked turnip can be conducted by most parents as can the differences noted

in cooking with or without salt. If the parent cannot explain to the satisfaction of the child, he has the teacher as a reso rce person. (Please provide the information asked. Do not send the book home to the parent unless one is requested.) Specific experiences can be provided to help children and parents classify objects at home. They can also learn to make the test predictions together. As parents become more informed of the school program, participation should increase.

Black parents often lack the funds as well as the knowledge to purchase educational toys. Little instruction or information is provided for parents on which toys are educationally better or how to make equivalent equipment at a nominal cost. Therefore, few school oriented materials are provided for Black children. Through the use of simple scientific equipment and improved parental involvement, instruction is available to parents for educational materials.

Skills are developed to develop other skills. Science for the Black child should eliminate the mystery of the term "scientist" as he realizes that most things in life require experimentation, ordering, observing, classifying, and comparing. These are skills which can be developed. He can refer to himself as a scientist.

Science and the pre-school teacher

Teachers generally receive little encouragement or reinforcement for providing numerous science activities in classrooms with Black children. This lack of encouragement most often is related to a lack of:

1) purpose for teaching science;

2) goals;

3) materials and equipment; and

4) teacher techniques.

Purpose

Science provides contact with the concept of the regularity of events and objects. Cause and effect relationships soon become evident as extensive contact is made. Items previously dealt with as separate phenomena can be classed with other similar items and treated accordingly. Children need the opportunity to discover and learn that all things have a unity with other things.

Curiosity is one of the child's most precious possessions. This curiosity must be cultivated and developed or it can be lost. Children need the opportunity to discover and learn that all things have a unity with other things.

Curiosity is one of the child's most precious possessions. This curiosity must be cultivated and developed or it can be lost. Children are stimulated by a teacher who is as curious about the functions and elements of the world as they are, and who is willing to find ways for them to explore their own inquiries. Black children particularly need to acquire a seeking, questioning attitude of mind, and the habit and skills of clear thinking. Young children excitedly delight in practicing and recognizing the value of sheer imaginative reflection (Lewis, 1970).

Since scientific method includes experimentation, observation, and recording, the child can actively participate. Although the experiment may not end as planned, he will have discovered what can happen if he is not accurate, consistent or thorough. He may also develop a new method or he may create a totally new and different experiment. (An industrial company is currently advertising, on a television commercial, the discovery of a disposable medical mask for doctors. The mask was a result of their attempt to develop better filling for padded brassiers!) The Black child needs to discover that many things have usefulness and all errors are not fatal. If the experiment does not proceed, according to his proposed outcomes, it may provide additional interests for a child and possibly the entire class.

Goals

Teachers often have a section of their outdoor space reserved for a garden or space for a classroom pet. Natural objects such as rocks and leaves are brought into classrooms and arranged in a display for children to observe. Too frequently the teacher's focus is on appreciation for nature only instead of on skill development. Simply arranging a display is inadequate for the purpose of science education during the child's early years. The key to its effectiveness is how the display is used. Teachers should organize their displays for the children's use. To encourage children's awareness for interesting display material, the teacher should bring new items into the classroom regularly and encourage the children to bring items also (Spodek, 1972).

It is a recurrent assumption that all children are familiar with gardens, pets, cars, tricycles, elevators or even how heat changes food. These concepts may not have been discussed with the young Black child. Hence these learnings may be completely unknown; inconsistencies may be rampant, or the activities may have gone unnoticed. One goal for classroom organization is that activities be planned in a manner through which the children can act upon materials and arrive at their own conclusions.

Leeper discusses four goals in teaching science and four requirements for an adequate science program. The goals in teaching science are:

1) To develop in children the ability to solve problems through the use of methods of science.
2) To develop in children an attitude--commonly called a scientific attitude. Elements of such an attitude are: Don't jump to conclusions, look at a matter from all sides, evaluate sources of information, be open-minded, don't be superstitious.
3) To help children gain scientific knowledge and information.
4) To develop in children an interest and appreciation in the science around them. Teachers must utilize the child's interest but also address the process of providing a well balanced science program.

Requirements for an adequate science program include:

1) Planning which is both definite and flexible (a framework).
2) Understanding from all major areas of science (earth and universe, living things and their activities, man and his environment, and matter and energy).
3) Integration of science learnings with other experiences of the young child (health, social studies, etc.).
4) Variety and balance in activities in which children participate (field trips, experiments, etc.) (Leeper, 1974, pp. 303-307).

Science is an instrument for exploring whatever may be tested by observation and experimentation. Scientific opportunities should awaken in the child interest in the professional scientist, a sense

of joy, the excitement, and the intellectual power of science. Science enlarges the child's appreciation of his world. It also leads to a better understanding of the range and limits of man's control over nature (Kuslan, 1969).

Materials and equipment

Invariably when we think of science we think of laboratories with great stores of equipment. Great!--if you have them!! Since most teachers do not have a fa astic array of supplies, consider for what purpose and for whom your science classroom is developed. In most schools you should be able to travel outside, no more than twice the length of your classroom, to find many things to observe. Skeels cautions teachers of inner city children against beginning with "butterflies and fishes." More interesting may be the question "What happens to the garbage?" (Skeels, 1971, pp. 71-72). How many children of any culture today have actually seen a cocoon? How many teachers in most schools today have seen a cocoon, especially in its natural habitat? Cities provide few areas for butterflies to reproduce and city living provides even less opportunity for the inhabitants to locate these wonders of nature. This does not mean that this area of science should be eliminated. It means we must begin with the child's own experiences and guide him to increasing levels of awareness. A search was made of outdoor resources from inner-cities. Ninety-eight resources were located. They include:

(1) Cement
(2) Pigeons
(3) Tracks in mud
(4) Iron fences
(5) Wheels
(6) Soil erosion
(7) Painting houses & fences
(8) Car jack
(9) Street Cleaner
(10) Clouds
(11) Pavement cracks
(12) Exposed roots
(13) Evergreen trees and shrubs
(14) Ants
(15) Ashes
(16) Sewers
(17) Wind
(18) Airplanes
(19) Steps
(20) Sound (Busch, 1966).

Inside the classroom or immediately outside its door is a wealth of materials for relevant activities. A small list for your consideration would include:

1) paper to: wet, crumple, feel, drop, float, heat, mark (with all kinds of markers) tear, paint, wring, etc.

2) asphalt, cement, and rocks to: crush, wet, dry, heat, paint, feel, drop, shape, weigh, pull, wrap, etc.

3) small amounts of candy can be: made, melted, crushed, dissolved, tasted, felt, painted with, soaked, floated, sunk, seined, etc.

4) crayons can be: made, melted, separated; the usefulness of the paper that surrounds the new ones can be tested; other kinds of paper can be tried as covering.

5) discover the advantages and disadvantages of crayons used on certain kinds of paper.

6) consider the different kinds of soil children bring and the displacement effect of water and wind (the air can be supplied by one or more children using paper fans). Which soil holds best, that which was planted with the grass seed or the barren soil?

The equipment needed to solve all these problems and more would include only a few containers, an eye dropper, water, soil, cement, asphalt, rocks, paper, crayons, sunlight (radiator or hot plate), wax, food coloring, candy, a hammer and paint. Surprise! Almost all of these items are in your classroom already! Your great laboratory is more than one-half ready for the class. Now utilize your tape recorder

to record the language of each action, as well as the oohs and ahs the experiments promote. You can even draw the directions onto picture story cards for individual and independent work as your class progresses according to your plan. Remember that science materials should be real objects, as much as possible, and not imitations. After real objects have been examined, imitations can be used to review previously introduced concepts. Whenever it is necessary to use pictures, those pictures should be photographs or very authentic drawings.

Teacher techniques

Children need opportunities to find out things on their own without teacher assistance. Teachers need to change their customary role of answer-giver to question-asker. As students are required to search for answers, invent concepts, and discover processes cognitive operations are stimulated. Teachers need to understand and accept the fact that it takes both time and practice to acquire skills in thinking. Reissman offers these guidelines in working with the Black child:

> they need action rather than introspection; they need structure and organization rather than a totally permissive situation; they need simple, more concrete, scientifically demonstrable explanations rather than symbolic, circuitous interpretations; and they need informal, sympathetic, nonpatronizing relationships rather than intensive ones (Reissman, 1963, p. 4).

Scientific processes include developing skills in observing, comparing, inferring, measuring, classifying, selecting, communicating, demonstrating, and hypothesizing (Barnard, 1966). Hurd and Gallagher identify the ability to understand science as the ability to:

1) grasp the central theme of a set of observations;

2) look at data from a variety of vantage points;

3) recognize the effect of changing one variable;

4) discount irrelevancies and focus on the useful aspects of information;

5) formulate useful hypotheses and test them;

6) search for new evidence; and

7) reason logically from a model (Hurd and Gallagher, 1968, pp. 5-6).

Plan your activities and teaching techniques to incorporate and develop these scientific processes and abilities.

Working with children who have had fewer experiences does require that the teacher supply the prerequisite experiences first. The old adage "take the child where he is" remains an excellent rule, and the teacher's next concern is leading him from that point to where we want him to arrive. The Black child's environment is often quite restricted (from the school perspective), therefore we must seek from his environment those elements familiar to him and build our program within that framework.

The Black child's interest in science is highest and most consistent when concrete materials are used for experimentation. To expect the young child to understand an abstract view of what you choose to discuss is a way of automatically programming the curriculum to failure for that session, as well as increasing difficulties in discipline.

Science gives great opportunities for child talk as opposed to teacher talk. His question to you of "How does it work?" can generally be rephrased. Your introduction to the material could be, "Try this

then tell me what you have discovered." It is our task not only to help young children understand their environment but to help them to tell about it in terms that have meaning for them (Ebbeck, 1974). The teacher need not spend time telling children about science.

The teacher should become aware of science books. Many are available to use specifically with the pre-primary child, others, especially teacher guides to elementary science textbooks, provide a wealth of teacher information. A partial list of sources is in the bibliography of this paper.

Summary

Science offers many avenues for the teacher to provide and encourage interesting learning for the Black child. As you locate others share them with your fellow teachers who are also searching for ways to unlock the school interest of the Black child. Each of us as a member of society profits greatly from producing knowledgeable and well balanced citizens. Science is one avenue toward the goal of productive citizenship. Resourcefulness, intrigue, and creativeness are some of the rewards for you and the child.

Accept the child where he is and open to him pathways of learning. As he learns ways to examine and evaluate his own environment you can provide avenues to examine other environments. Further examination and evaluation of new material is limited only by the lack of teacher and child ingenuity. Continue to broaden your resources with the use of films; pictures; and consultants such as parents, community helpers, school helpers, and others.

You are concerned with the overall development of the child. The Black child in your class needs skills, self-awareness and "school" confidence. He also needs a framework within which he can examine himself, his environment (near and far) and develop methods of, and the love for, learning. Will you accept the challenge and the responsibility?

SCIENCE RESOURCE BOOKS

Alexander, Anne. Noise in the Night. Chicago: Rand McNally, 1966.

Atwood, Ann. The Wild Young Desert. New York: Scribners, 1970.

Barten, Helen. Do You Hear What I Hear? Eau Claire, Wisc.: E.M. Hale, 1966.

Bulla, Clyde. What Makes a Shadow? New York: Scholastic Book Service, 1968.

Busch, Phyllis. Puddles and Ponds: Living Things in Watery Places. New York: World, 1969.

_____. At Home in Its Habitat: Animal Neighborhoods: New York: World, 1970.

_____. Swamp Spring. New York: Macmillan Inc., 1969.

Dayton, Mona. Earth and Sky. New York: Harper & Row, 1969.

Epstein, Samuel. Pick It Up. New York: Holiday House, 1971.

Hawes, Judy. What I Like About Toads. New York: Crowell, 1969.

Hazen, Barbara. Where Do Bears Sleep? Reading, Mass: Addison-Wesley, 1970.

Hutchins, Pat. Clocks and More Clocks. New York: Macmillan and Company, 1970.

Mari, Iela. The Apple and the Moth. New York: Random House, 1969.

_____. The Chicken and the Egg. New York: Random House, 1969.

May, J. Alligator Hole Chicago: Follett, 1969.

_____. Blue River. New York: Holiday House, 1971.

Milgrom, Harry. Adventures with a Cardboard Tube. New York: Sutton, 1972.

Pelgreen, J. Backyard Safari. New York: Doubleday, 1971.

Podendorf, Illa. Everyday Is Earth Way. Children's Press, 1971.

Ringi, Kjell. The Sun and the Cloud. New York: Harper & Row, 1971.

BIBLIOGRAPHY

Barnard, J. Darnell, et. al. Science for Tomorrow's World. New York: Macmillan Company, 1966.

Busch, Phyllis S. "An Urban Field Guide to Elementary Science: Science Education 50, No. 2: 128-135, March 1966.

Ebbeck, Frederick N. and Ebbeck, Marjory A. New We Are Four. Columbus, Ohio: Charles E. Merrill Publishing Company, 1974.

Hess, Robert D. and Croft, Doreen J. Teachers of Young Children. Boston: Houghton Mifflin Company, 1972.

Hurd, Paul D. and Gallaher, James J. New Directions in Elementary Science Teaching. Belmont, California: Wadsworth Publishing Company, 1968, pp. 5-6.

Kuslan, Louise I. and Stone, A. Harris. Readings on Teaching Children Science. Belmont, California: Wadsworth Publishing Company, 1965.

Leeper, Sarah H., et. al. Good Schools for Young Children, Third Edition. New York: Macmillan Publishing Company, 1974.

Lewis, June E. and Patter, Irene C. The Teaching of Science in the Elementary School, Second Edition. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970.

Reissman, Frank. "Some Suggestions Concerning Psychotherapy with Blue Collar Patients" Mobilization for Youth and Department of Psychiatry. Columbia University, New York City, Unpublished mimeographed paper. 1963, p. 4.

Skeel, Dorothy J. Children of the Street, Teaching in the Inner-City. Pacific Palisades, California: Goodyear Publishing Co., Inc., 1971.

Spodek, Bernard. Teaching in the Early Years. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972.